PHYSICS 300: MODERN PHYSICS

Spring 2018

**Instructor**: Chris Verzani

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**Office Hours**: Mon 10:00-10:50 (in B112), Tue. 15:00 – 15:50, Wed. 14:00-

14:50, Thurs. 10:00- 10:50, other times by appointment

**Text**: Modern Physics for Scientists and Engineers 4th edition,

by Thornton and Rex

Course Overview: In a general way, *Modern Physics* can be thought of as the advances that have taken place in physics since around 1900. Two revolutionary theories, namely relativity and quantum mechanics, have shaped much of modern physics, contrasting Newtonian (or *classical*) mechanics. Chapter 1of the textbook for this course is written to help put this all into historical context. A primary objective of this course is to develop an ability to analyze and solve physical problems from the perspective of these theories. Understanding modern physics requires adopting many new physical ideas, beyond what you’ve already seen with classical mechanics, and in some instances replacing conceptual Newtonian knowledge with more contemporary constructs.

Tentative Course Schedule: Physics 300: Modern Physics, Spring 2018

This is a rough outline of the material being covered. More detailed reading and homework assignments will be handed out in class.

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| **Chapter(s)** | **Subjects(s)** | **Exam Date** |
| **1, 2 (and 15?)** | **Introduction and Special Relativity, (General relativity)** | **Exam 1: Fri., Feb. 16th** |
| **3 and 4** | **Quantization and Atomic Physics** | **Exam 2: Fri., Mar. 16th** |
| **5, 6, (and possibly 7)** | **Quantum Mechanics** | **Exam 3: Fri. Apr. 20th** |
| **12** and possibly **14** | **Nuclear Physics, Particle Physics** | **Exam 4 (Final) on Wed., May 16th 12:30 – 2:30** |

Final Grade Evaluation: Your final percentage grade in the course will be based on performance on your homework (20%) and exams (80%). Final grades will be determined from your overall percentage grade as follows:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A | A- | B+ | B | B- | C+ | | C | C- | D+ | D |  | F |  |
| 93-100% | 90-92.9% | 87-89.9% | 83-86.9% | 80-82.9% | 77-79.9% | 73-76.9% | | 70-72.9% | 67- 69.9% | 60-66.9% |  | Below 60% |  |

Your grades will be updated on D2L. If you have any questions about your grade at any point during the semester, please feel free to contact me.

Exams: There will be four exams during the semester. Three 50-minute exams will be given during the lecture period, each worth 18% of your semester grade. The final exam will be 2 hours in duration, and count for 26% of your grade.

Homework: Homework will be assigned approximately once a week. Homework deadlines will be posted on D2L, and announced in class.

Your total score on your homework assignments will count toward 20% of your final grade in the class. Three selected problems from each assignment will be graded. The graded problems will be chosen at random after the due date. Homework must be submitted at or before the deadline to receive full credit. Homework may be turned in after the deadline, but will incur a 50% penalty. Late homework will not be accepted after that assignment has been graded and turned back for the class. Assignments due in a week concurrent with an exam will not count toward your homework grade, and do not need to be turned in.

Discussing strategies for homework problems with your classmates should strengthen your understanding of the material and is encouraged. However, you should only turn in work that is your own, representing your own understanding of the material. In order to receive full credit for a homework problem, you should show all your work, including explanations for your approach when appropriate.

Attendance: Although attendance is not recorded for the lectures, it is highly recommended that you attend. Regular attendance will help you learn the material and, thus, lead to better performance on homework, and exams. Attendance to all exams is mandatory, and students are responsible for all material discussed and announcements made during any scheduled class meeting.

Make-up work will only be accepted in the case of excused absences. Excused absences include death in the immediate family, illness with a note from the appropriate health care professional, religious observance, an event in which you officially represent the University of Wisconsin – Stevens Point and the event directly conflicts with an exam. Excused absences must be approved with documenting material **prior** to the date of absence. Unexcused absences from an exam will result in a grade of zero.